

#377

PIONEER 11

HI TIME RESOLUTION B VECTORS

73-019A-01C

1-MIN AVM CRUISE DATA

73-019A-01J

PIONEER 11

HI TIME RESOLUTION B VECTORS, TAPE

73-019A-01C

This data set has been restored. There were originally sixteen 7-track, 800 BPI tapes written in Binary. There is one restored tape. The tapes were created on a 1108 Computer. The DR tape is a 3480 cartridge and the DS tape is 9-track, 6250 BPI. The DR and DS numbers along with the corresponding D numbers and the time spans are as follows:

DR#	DS#	DD#	FILES	TIME SPAN
DR03868	DS03868	D29051*	1-2	04/30/73 - 05/01/73
		D40298	3	11/24/74 - 11/24/74
		D40299	4	11/25/74 - 11/25/74
		D40300	5	11/26/74 - 11/26/74
		D40301	6	11/27/74 - 11/27/74
		D40302	7	11/28/74 - 11/28/74
		D40303	8	11/29/74 - 11/29/74
		D40304	9	11/30/74 - 11/30/74
		D40305	10-16	12/01/74 - 12/07/74
		D40306	17	12/08/74 - 12/08/74
		D40307	18	12/09/74 - 12/09/74
		D40308	19	12/10/74 - 12/10/74
		D40309	20	12/11/74 - 12/11/74
		D40310	21	12/12/74 - 12/12/74
		D40311	22	12/13/74 - 12/13/74
		D40312	23	12/14/74 - 12/14/74

* NOTE: THE TIME GAP BETWEEN THE SECOND FILE AND THE THIRD FILE

REQ. AGENT
JVP
BER

RAND NO.
RC7435

ACQ. AGENT
JHK
RWP

PIONEER 11
HI TIME RESOLUTION B VECTORS
73-019A-01C

This data set catalog consists of 16 Pioneer 11 data tapes. The tapes are 800 BPI, 7 track, binary and contain one file of data per day. Two tapes are multifiled and are so labeled. The tapes were created on a UNIVAC 1108 computer.

Time spans are as follows:

<u>D#</u>	<u>C#</u>	<u>FILES</u>	<u>TIME SPAN</u>
D-29051	C-18776	2	4/30/73 - 5/01/73
D-40298	C-21020		11/24/74
D-40299	C-21021		11/25/74
D-40300	C-21022		11/26/74
D-40301	C-21023		11/27/74
D-40302	C-21024		11/28/74
D-40303	C-21025		11/29/74
D-40304	C-21026		11/30/74
D-40305	C-21027	7	12/01/74 - 12/07/74
D-40306	C-21028		12/08/74
D-40307	C-21029		12/09/74
D-40308	C-21030		12/10/74
D-40309	C-21031		12/11/74
D-40310	C-21032		12/12/74
D-40311	C-21033		12/13/74
D-40312	C-21034		12/14/74

JET PROPULSION LABORATORY California Institute of Technology • 4800 Oak Grove Drive, Pasadena, California 91109

February 7, 1977

Refer to: 328-EJS:ct

Dr. Joseph King
Mail Stop 601.1
National Space Science Data Center
Goddard Space Flight Center
Greenbelt, Maryland 20771

Dear Joe:

Under separate cover we are sending you a magnetic tape containing our high time resolution Pioneer Magnetometer data for two days. We call these tapes which contain individual field vectors, reduced data records (RDRs). We have finished a number of quality checks and are not aware of any bad data or other anomalies on these days.

A format statement will accompany the tape. There is one exception in the tape you will receive: it will not contain a COD header file. The information contained in this header serves only to identify the tape, and for simplicity, was deleted in reproduction.

I think this tape will satisfy your requirement of having examples that can be provided to prospective RDR users. We are now proceeding down the list of other data that we have agreed to provide NSSDC. You should be receiving more data from me reasonably soon.

Sincerely,

E. J. Duffin

Enclosure

cc: E. Roushani (w/o encl.)
J. Hall "
C. Stanley "

ELAINE DOBBINS

8-792-2750

354
2248
~~Feb 10, 1977~~

Twx 910-588-3239

Tlx 910-588-3294

APPENDIX I

Form and Content of the RDR Tapes

The Pioneer HVM RDR Tapes are written on 7-track tape units at 800 bpi. Each tape has a header file written in even parity (BCD) to identify the tape. The header file is followed by one or more data sets (files). Each data set contains all the data for a given day of the mission. Days are numbered consecutively for each year. January 1 is day 1.

Each block (physical record) in a data set consists of a HEADER of 44 words and zero or more SCIENCE DATA GROUPS of variable length. A word is defined as 36 bits (6 tape characters of 6 bits each). A block with zero SCIENCE DATA GROUPS is a dummy record indicating that there is no data for a given day. If there is any data for a day all blocks in the data set will have at least one SCIENCE DATA GROUP.

(WARNING: Many of the older tapes have empty files for days on which there is no data. This means that a double end-of-file mark does not necessarily mean end-of-volume on these tapes.)

Table 1 - Header Portion of Block

<u>Word</u>	<u>Variable</u>	<u>Description</u>
1	NBLK	Block Number. (Blocks are numbered consecutively starting with one in each data set.)
2	LBLK	Block Length (in 36 bit words).
3	NGRP	Number of Science Data Groups in the block. If there are no gaps in the EDR record from which this data is taken, NGRP is one.

<u>Word</u>	<u>Variable</u>	<u>Description</u>
4	IFDAY	The magnitude of the contents of this word is the day of the year. If the number is negative, there are corrected or suspect times in the block.
5	NFRAME	Number of first frame in the block (modulo 8192).
6	IRTLT	Round trip light time.
7	HRANGP	Distance of spacecraft from sun (km).
8	CELLTP	Heliocentric celestial latitude of spacecraft (degrees).
9	CELLNP	Heliocentric celestial longitude of spacecraft (degrees).
10	REARSU	Distance of Earth from sun (km).
11	CELLTE	Heliocentric celestial latitude of Earth (degrees).
12	CELINE	Heliocentric celestial longitude of Earth (degrees).
13		
●		Spectrum Analyzer data plus contents of Science Subcom
●		Words 106 and 202. (See Figure 1 for format of this
●		group of words.)

44

The first 12 words of the HEADER are in 1108 internal format. The spectrum analyzer data is in a format similar to that used for the science data words except the fractions are 6 bits instead of 9 bits. The E106 words are not converted. Figure 3 shows the meaning of bits. Science subcom word 202 is subcommutated again into a cycle eight words long. The first word is a sync word and should always contain zero. The second word is the instrument serial number. The third word is the electronics temperature in degrees C. The fourth word is the sensor temperature in degrees C. The fifth word is the voltage at the +12 volt supply monitor (this is the

only non-integer word in the group. For this word only, the three low order bits are assumed to be to the right of the binary point). The sixth word is the A/D converter reference and should be about 41. The seventh word contains the range in which the instrument is operating. The eighth word is from the 24 volt monitor and should be 63.

The SCIENCE DATA GROUPS are stored as shown in Figure 2. Each SDG consists of a series of consecutive data points. The number of points is given (split between two words as shown), and the times of the first and last points are given in addition to the data values themselves. (Note that the RDR read program reconstructs all the times of the data points in a group from the information given.)

The three fractions of the science data words give the three components of the magnetic field in Solar-Interplanetary Coordinates in units of gamma. The values are stored on the tape in a floating point octal representation. The given characteristic is a power of eight given in excess -16 notation (allowing exponents to have the range -16 to +15) and is used with all three fractions. Three sign bits are given as shown in Figure 2. Each of the fractions is three octal digits long. The ~~fraction~~ having the largest magnitude is normalized in terms of octal digits (not bits) and the remaining two fractions are adjusted to have the same exponent. The fractions are truncated not rounded when they are stored on the tape.

$$\text{FRACTION} = \frac{\text{9 BIT INTEGER}}{512 \text{ (1000 OCTAL)}}$$

FIGURE 1

HEADER

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	Block (Record) Number. (Blocks numbered consecutively from 1 for each day)																																			
2	Block Length (in 36 bit words).																																			
3	Number of Science Data Groups in block (1 if no gaps in data).																																			
4	Flag, magnitude is day of year, minus sign indicates corrected or suspect times.																																			
5	Extended frame counter and Subcom ID of first data frame in block.																																			
6	Round trip light time.																																			
7	Spacecraft sun distance in km (1108 floating point).																																			
8	Heliocentric celestial latitude of spacecraft in degrees (1108 fp).																																			
9	Heliocentric celestial longitude of spacecraft in degrees (1108 fp).																																			
10	Sun-Earth distance in km (1108 fp).																																			
11	Heliocentric celestial longitude of Earth in degrees (1108 fp).																																			
12	Heliocentric celestial longitude of Earth in degrees (1108 fp).																																			
13	Characteristic	S ₁	S ₂	S ₃	Fraction E103																															
14	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
28	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"		
29	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"		
30	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"		
44	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"		

Q is quality indicator, 0 if word contains good data, 1 if word contains fill

FIGURE 2

SCIENCE DATA GROUP

n	Number of frames (H.O.B.)	GMT in milliseconds of day of first frame in group
n+1	Number of frames (L.O.B.)	GMT in milliseconds of day of last frame in group
n+2	Characteristic	Fraction 1
n+3	S ₁	"
n+4	S ₂	"
n	S ₃	"
n		Fraction 2
n		"
n		"
n		"
n		Fraction 3
n		"
n		"
n		"
n		"

FORMAT OF E106

1	0 if calibrate off, 1 if calibrate on
2	0 if ranging in manual mode, 1 if ranging in automatic mode
3	0 if instrument in normal mode, 1 if instrument in interchange mode
4	High order bit of calibration step
5	Middle bit of calibration step
6	Low order bit of calibration step

D-29051
4/30/73 -
5/01/73

\$JOB 13:14:56

ENOP DUMP X-396

\$ASS IN MSS

\$EXEC DPROC7.BS

INPUT TAPE ON MSS

DATA INPUT 2 1 1

FILE 1 RECORD 1 LENGTH 4890 BYTES

(0) 060000000001 00000001457 00000000002 0000000001201 000000023417 000000367354 234457005656 576176354016

(48) 210703303132 234437350273 612377730370 210667021123 62077777077 62077777077 200200404020 200150603020

(96) 200100404020 200210404020 200100404020 200150603020 200160703020 62077777077 62077777077 200230404020 2002260505020

(144) 200200404020 200210404020 200150603020 200160703020 62077777077 62077777077 200230404020 2002260505020

(192) 20031503001 200100404077 200130502000 200160703064 001000404034 170646432032 170727235146 200100404052

(240) 200100404001 200350703077 200211004000 200160703064 0010004065150 012000364003 211346102715 211333076724

(288) 21132664736 211316044754 211276023754 211267041750 211246030757 211237032753 211273042760 211256044747

(336) 211254645747 211264070746 211255065745 211271055741 211303062731 21132307736 211316107726 211301044716

(384) 211315054715 211301100724 211305017740 211330013732 213327027721 213335023714 213311036735 213316035722

(432) 211314022707 21133014721 211340020712 211337042771 211334027072 2113311035707 211360125674

(480) 211346145677 211351157675 211334160702 211340145705 211345155710 211335160712 211332135707 211353141706

(528) 211336152711 211343132715 211343157712 21134214312 211340131674 211343133702 21135514674 211355134670

(576) 211345146663 211357163700 211352153674 2113351533675 211325125671 211330112700 211343136712 211333144724

(524) 211336135721 211340151713 211323153707 211327133705 211337145711 211333140707 211323125710 211345134724

(572) 211350122716 211355122717 211356136726 21134111714 211363126724 211330136732 211346134715 2113421335713

(620) 211341137721 211333154271 211335160712 211342143712 2113272116666 211373104674 211341102712 211344115676 211345135667

(668) 211364154666 211401136664 211377137671 211372116666 211341102712 211344115676 211345135667

(816) 211334130676 211351126701 211344126675 211347106704 211352063704 211347120663 211344153664 211323233650

(864) 211306240670 211310204710 211314206674 211313207671 211313217677 211316210674 211314205674 2113217670

(912) 21132711701 211340165704 211336157704 2113251161677 211322170701 211320155700 2113362153701 211340144710

(960) 211347167723 2113340150713 21134413710 211354134711 21137215712 211401303676 211362120661 211361100646

(108) 211372072544 211402100645 211365050647 211414043647 211411014640 213426001647 211423021661 21144037657

(1056) 211412041644 211412055652 211424072662 211412075665 211426067702 211424075704 211424075701 211425070674

(1104) 211435073704 2114250656567 211433101672 211433101672 211442120701 211431076701 211435073676 211430066670 211444102673

(1152) 211437072674 211451066701 211447074672 211450067674 211466106663 211460073642 211467051636 211472063651

(1200) 211506061654 2115004452 21150035654 211457073651 21145506453 211455070652 21145506453 21145506453

(1248) 211447060645 211452073636 211460072663 211460072663 211460072663 211460072663 211510020621 211512001617

(1296) 211462040644 211452062652 211434114676 211415100662 21143115671 211420122675 21141310700 211421114704

(1344) 211413074671 211413101676 211375072702 211375102703 211412105713 211410112716 21142010716 211416106703

(1392) 211410115705 21141211704 211413121705 211423123710 2114047712 2114021124712 2113731215711 211402123714

(1449) 211405115717 211412121721 211460120717 211414127721 21141105724 211372052735 211377067727 2113771074726

(1488) 2114170373715 211412110720 211423071722 211423071722 21140466721 211402054722 211373053731 211413032700

(1536) 211403016715 211402044725 211372541731 211366051726 211376070731 21140205725 21141407705 211406073712

(1584) 211404074721 211377064716 211402072715 211401102726 211400073720 21137063715 211366071733 211356064725

(1632) 211364104733 211367101731 211357114722 211363105722 211377120730 2113731113724 211376132717 211372125717

(1680) 211350125723 211353130724 211357114723 211372122724 211362143723 211362143723 211356135716 211365124715

(1728) 211344145727 211323152727 211331145730 211337151723 211355157723 211355157723 211316156714 211316162714

(1766) 2113171145707 211322153714 2113311456711 211344131705 211343116672 211362133700 211353122765 211340134703

(1824) 211345152675 211337156711 211333143670 211352156676 211341151674 211344152701 211317227715 21130233712

(1872) 211316213712 211324207710 211323204707 211322164702 211326171717 211307200721 211306226721 211302204714

(1920) 211321170716 211324151726 211344124731 211333137726 211354143717 211335135731 211326164731 211315210727

(1968) 2113131171737 211322132721 211345137721 211337130721 211344124724 211334117373 211342131724

(2016) 211330057733 211327016726 21325033751 211322025751 211322052765 211323122761 211335122765 211322160750

(2064) 211301152725 211273163745 211300174733 211316151731 211304140733 211305147736 211300157735 211274146742

(2112) 211312154735 211301135735 211300137727 211272137733 211263144736 211272164730 211273143726 211306142737

(2160) 211312154747 211261156746 211253146751 211260146754 211262147746 211262161752 211265146761 211256121760

(2208) 211261152741 211243137750 211245137747 21127016751 211275125722 211303145723 211301163732 211277170747

(2256) 211256143753 21125136760 211250337474 211273135750 211264115746 211252136741 211234144742

(2334) 211222143752 211220155752 211227171756 21122015760 211216170761 211170210765 211166204763 211221160750

(2352) 221024017103 221026013100 211301130771 211301113763 211301110750 211306115754 211323161744

(2400) 211267161762 211263170756 21124417770 211246217766 211226212773 211235222755 211276250735 211276233740

(2448) 211342142734 211314231741 211260224754 211245233756 21124426760 21125224762 211223231766

(2496) 21125024754 211240240756 211241250764 21125224762 21125726674 211257233754 211264232742

(2544) 211272236742 211253224754 211255170763 2112362220767 211251224767 2112422336763 211246223766

REQ. AGENT

ACQ. AGENT

CMW

JFC

PIONEER 11

HELIUM VECTOR MAGNETOMETER - 1-MIN CRUISE DATA

73-019A-01J

This data set consists of 1 magnetic tape. The tape were written on 9-track, 6250 bpi, in ASCII format, and labeled 'P11HVM'. There are a total of 138 files on the tape (46 physical files, with a header file and a trailer file). The last 5 physical files contains documentations, description and file formats. The D and C numbers are as follows:

D#	C#	FILES	LABEL	TIME SPAN
-----	-----	-----	-----	-----
D-108256	C-032361	46	P11HVM	04/06/73 - 12/31/76

Directory ANON_DIR: [COHO.P11MAG.MINUTE]

IGHTTIME.P11;2	393	24-JUL-1995	13:55:11.00
M73091.P11;1	2802	18-JUL-1995	17:31:28.00
M73119.P11;1	4208	18-JUL-1995	17:43:14.00
M73154.P11;1	2861	18-JUL-1995	17:45:28.00
M73182.P11;1	3268	18-JUL-1995	17:46:41.00
M73210.P11;1	4152	18-JUL-1995	17:49:32.00
M73245.P11;1	3334	18-JUL-1995	17:50:52.00
M73273.P11;1	4435	18-JUL-1995	17:52:04.00
M73308.P11;1	3354	18-JUL-1995	17:55:07.00
M73336.P11;1	3175	18-JUL-1995	17:57:50.00
M73364.P11;1	233	18-JUL-1995	17:58:56.00
M74001.P11;1	3713	21-JUL-1995	15:56:34.00
M74034.P11;1	2308	21-JUL-1995	15:58:08.00
M74062.P11;1	3077	21-JUL-1995	16:00:57.00
M74090.P11;1	3251	21-JUL-1995	16:03:00.00
M74118.P11;1	4317	21-JUL-1995	16:04:30.00
M74153.P11;1	3474	21-JUL-1995	16:06:33.00
M74181.P11;1	4399	21-JUL-1995	17:19:45.00
M74216.P11;1	3349	21-JUL-1995	16:10:30.00
M74244.P11;1	3767	21-JUL-1995	16:13:57.00
M74272.P11;1	4330	21-JUL-1995	16:16:48.00
M74307.P11;1	2927	21-JUL-1995	16:18:41.00
M74349.P11;1	1927	24-JUL-1995	14:37:15.00
M74363.P11;1	414	21-JUL-1995	16:20:45.00
M75001.P11;1	3748	21-JUL-1995	16:21:56.00
M75033.P11;1	3040	24-JUL-1995	10:44:56.00
I75061.P11;1	2398	21-JUL-1995	16:23:54.00
M75089.P11;1	6234	21-JUL-1995	16:24:54.00
M75152.P11;1	7671	21-JUL-1995	16:26:20.00
M75214.P11;1	5461	21-JUL-1995	16:27:59.00
M75271.P11;1	2638	21-JUL-1995	16:29:19.00
M75306.P11;1	2098	21-JUL-1995	16:30:19.00
M75334.P11;1	2330	21-JUL-1995	16:32:50.00
M76001.P11;1	1380	21-JUL-1995	16:35:37.00
M76036.P11;1	896	21-JUL-1995	16:38:50.00
M76064.P11;1	966	21-JUL-1995	16:40:17.00
M76092.P11;1	2620	21-JUL-1995	16:40:58.00
M76148.P11;1	2192	21-JUL-1995	16:41:55.00
M76204.P11;1	2756	21-JUL-1995	16:42:49.00
M76260.P11;1	2967	21-JUL-1995	16:45:31.00
M76316.P11;1	4751	21-JUL-1995	16:46:21.00
MAGCOORD.DOC;3	38	17-JUL-1995	14:46:59.98
P11HVM_15M.SFD;3	20	1-AUG-1995	14:18:11.10
P11MAGMN.CAT;1	3	1-AUG-1995	14:28:48.39
P11MAGMN.FMT;4	10	2-AUG-1995	15:37:18.04
WOLF.TXT;2	10	1-AUG-1995	14:22:04.71

Total of 46 files, 127695 blocks.

FAST ANALYSIS OF TAPE AND RECOVERY -- FATAR VER 4.3.5 -- INNOVATION DATA PROCESSING AUTHORIZED 8/17/95 PAGE 1

FATS070 CONTROL CARD TABLE SIZE IS 4096 BYTES

FATAR CONTROL CARDS

```
1-- ANALYZE BLP, LABELS=NO, PRTLEN=2000
2-- PRINT LF=2, B=1-2, CHAR
3-- PRINT LF=131, B=1-2, CHAR
4-- PRINT LF=134, B=1-2, CHAR
5-- PRINT LF=137, B=1-2, CHAR
```

FATS071 TAPE BUFFER SIZE IS 65535 BYTES

CHARACTERISTICS OF THE TAPE TO BE ANALYZED
UNIT SERIAL DEN TRTCN
59B CMR1 6250

FATAR DETAIL REPORT

1...5...10 {COLUMN GRID IS VALID ONLY FOR CHARACTER FORMATTED DATA}

BLOCK NUMBER	LENGTH/ DISPL	MESSAGE/ BLOCK TYPE	START FILE	END OF FILE	FILE CONTAINED	5 BLOCKS
*	*	*	*	*	1	FATS038 DATA FILE IN ASCII/ASCII - TRANSLATED TO EBCDIC
*	*	*	*	*	2	FATS038 DATA FILE IN ASCII/ASCII - TRANSLATED TO EBCDIC

1 2048 PRINT REQUESTED 0035 YR DAY HR MN SC DELAY (SEC)0030 73 096 07 44 00 0 6410030 73 097 00
+00080 00 00 2.4880030 73 098 00 00 00 5.1960030 73 099 00 00 00 7.8990030
+00160 73 100 00 00 00 10.5990030 73 101 08 48 00 14.2820030 73 102 00 01 00 1
+00240 5.9880030 73 103 00 07 00 18.6880030 73 104 00 59 00 21.4700030 73 105 00
+00320 00 00 24.0700030 73 106 00 00 00 26.7520030 73 107 00 00 00 29.4240030
+00400 73 108 00 00 00 32.0900030 73 109 00 00 00 34.7470030 73 110 00 01 00 3
+00480 7.3950030 73 111 00 01 00 40.0340030 73 112 00 00 00 42.6650030 73 113 00
+00560 01 00 45.2840030 73 114 00 00 00 47.8950030 73 115 00 00 00 50.4930030
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